REMARKS

This application is based on Japanese patent application number 2003-082679 filed March 25, 2003, upon which a claim for foreign priority under 35 U.S.C. §119 was made. A certified copy of the priority document was filed with the application. Acknowledgment of the claim for foreign priority and receipt of the certified copy of the priority document is respectfully requested.

Claims 1 to 18 were filed with and are pending in the application; however, the Examiner indicated that only claims 1 to 17 are pending. Claim 18 bridges pages 51 and 52 of the application and is dependent on claim 12, which the Examiner has indicated as being allowable. Therefore, it is assumed that claim 18 is allowable with claim 12. The indication that claims 2 to 7, 12, and 14 to 17 are allowed is noted with appreciation.

The disclosed and claimed invention provides a network connection system which facilitates traffic shaping in accordance with a set DSL rate when a cell-based DSL and a packet-based DSL are accommodated in the mixture. The invention anticipates that a variety of types of services will be provided through the Internet in the future. Presumably, a variety of guaranteed class services will be provided through the same line, such as services for which a minimum rate is guaranteed, in addition to simply those services which are provided with priority, and best-effort services which are not provided with priority. As shown in Fig.4, of the drawings, the present invention provides a network connection system for connecting a first communication network 7 and a plurality of user terminals 5 when a second communication network 6 is interposed between the first communication network and the plurality of user terminals, wherein the second communication network employs a second protocol (ATM) different from a first protocol (IP) employed in the first communication network. The system includes a scheduling apparatus 4, a protocol converter 3, and a multiplexer 1. As shown in Fig. 5, the scheduling apparatus 4 has an overhead amount correction unit 11 for correcting an overhead amount between data conforming to the

second protocol and data conforming to the first protocol to convert received information on a rate based on the second protocol to a rate based on the first protocol, and a scheduler 12 for shaping a transmission rate for data conforming to the first protocol from the first communication network such that the data conforming to the first protocol is delivered at a transmission rate equal to or lower than the rate calculated by the overhead amount correction unit 11. The current reception rate 10 set for the user terminals, notified by the current rate detector 20, is converted to the rate based on the second protocol by the overhead amount correction unit 11 of the scheduling apparatus 4. Then, this rate 10 is relied on by the protocol converter 3 to shape the transmission rate for the data conforming to the first protocol before the conversion to the data conforming to the second protocol. In consequence, even when the multiplexer 1 accommodates a mixture of lines based on the second protocol and lines based on the first protocol, the shaping can be readily accomplished in accordance with a set reception rate.

Claims 1, 8 to 11, and 13 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Application Publication 2003/0108063 of Joseph et al. in view of U.S. Patent Application Publication 2003/0174729 of Heink et al. and U.S. Patent No. 6,529,548 to Aoki et al. This rejection is respectfully traversed for the reason that the combination of the publications of Joseph et al. and Heink et al. and the patent to Aoki et al. does not teach or otherwise suggest the claimed invention.

In making the rejection as to claims 1 and 13, the Examiner, in his first paragraph, reads the preamble of claim 1 on Joseph et al. He then cites paragraph [0037] as describing a scheduling apparatus, but paragraph [0037] is a brief description of Fig. 9B having nothing to do with a scheduling apparatus. He then goes on to say that Joseph et al. fails to describe "an overhead amount correction unit . . .", "a scheduler for shaping a transmission rate for data conforming to said first protocol . . .", "a protocol converter . . .", "and a multiplexer . . .", quoting from claim 1. In other words, the Examiner admits that Joseph et al. disclose none of the specifically recited elements of the claimed network connection system of claim 1 or, presumably,

the claimed traffic shaping method of claim 13.

The Examiner then turns to the Heink et al. publication, citing paragraph [0037] which broadly describes a buffering and scheduling unit, stating that Heink et al. disclose a scheduling apparatus that includes an overhead amount correction unit, citing paragraphs [0106, 0107], which describes an internetworking case 1 for conversion wherein "the AAL5-SDU is packed transparently into an Ethernet packet with a new generated header and trailer", as generally shown in Fig. 15; however, no such overhead amount correction unit, as claimed, is disclosed in the Heink et al. publication. The Examiner goes on to state that Heink et al. disclose "a scheduler . . ." (citing paragraphs [0039 & 0024], "a protocol converter . . ." (citing Figs. 16 & 10], "and a multiplexer . . ." (citing again Figs. 16 & 10, and paragraph [0101] and mux 17). However, the Examiner misses the point of the claimed invention. What Heink et al. disclose is an ATM-Port-Module with an integrated Ethernet (not Internet) switch. The advantage of the Heink et al. system is providing higher data transmission rates by packing the payload of many ATM-cells into one Ethernet packet, leading to less overhead when processing header data. Thus, the Heink et al. ATM-Port-Module with an integrated Ethernet switch has a completely different purpose and, hence, a completely different structure from the claimed scheduling apparatus.

To better emphasize the differences between Heink et al. and the claimed scheduling apparatus, claim 1 has been amended to recite that the claimed scheduling apparatus includes "an overhead amount correction unit *receiving rate information which represents a current rate set between the second communication system and said plurality of user terminals* for correcting an overhead amount between data conforming to said second protocol and data conforming to said first protocol to convert received information on a rate based on said second protocol to a rate based on said first protocol; and a scheduler for shaping a transmission rate for the data conforming to said first protocol from said first communication network such that the *data conforming to said first protocol is delivered at a transmission rate equal to or lower than said rate calculated by said overhead amount correction unit . . .*"

(emphasis added). Claim 1 further recites "a multiplexer *including a current data rate detector for supplying said scheduling apparatus with said rate information as indicative of a currently set reception rate for said user terminals*, said multiplexer being configured to transmit to each of said user terminals the data conforming to said second protocol from said protocol converter or the data conforming to said first protocol after said scheduling apparatus has shaped the transmission rate therefor" (emphasis added). This structure is clearly illustrated, for example, in Figs. 4 and 5 which shows the rate information 10 being supplied from the current data rate detector 20 to the overhead amount correction unit 11. Nothing like this is to be found in Heink et al. Moreover, the combination of Joseph et al. and Heink et al. does not suggest this structure.

The Examiner relies on the patent to Aoki et al. for a disclosure of "a multiplexer including a current data detector for supplying said scheduling apparatus with said rate information as indicative of a currently set reception rate for said user terminals", citing col. 8, lines 11–19; however, Aoki et al. do not disclose a multiplexer 1 including a current data rate detector 20, as shown in Fig. 4 and specifically recited in claim 1. Moreover, there is nothing in Aoki et al. concerning providing rate information 10 from the current data rate detector 20 to an overhead amount correction unit "for correcting an overhead amount between data conforming to said second protocol and data conforming to said first protocol to convert received information on a rate based on said second protocol to a rate based on said first protocol", as specifically recited in claim 1.

Claims 8 to 11 each depend from claim 1 and further limit the base claim on which they are dependent. They are patentable over the prior art for the same reasons advanced with respect to claim 1.

As to claim 13, the Examiner dismisses this claim as a method claim comprising a subset of claim 1. That is a mis-characterization of claim 13. As mentioned, the claimed invention anticipates that a variety of guaranteed class services will be provided through the same line, such as services for which a

minimum rate is guaranteed, in addition to simply those services which are provided with priority, and best-effort services which are not provided with priority. The several embodiments of the invention, shown in Figs. 5, 6 and 7 of the drawings illustrate such a variety of guaranteed class services. Claim 13 recites a "traffic shaping method, in a network connection system for connecting a communication network and a plurality of user terminals, for shaping a transmission rate for data conforming to a first protocol from said communication network". The recited method comprising the steps of "classifying data conforming to said first protocol received from said communication network based on quality guaranteed classes set thereto" (see classes 1, 2 and 3, for example), "correcting an overhead amount between a rate based on a second protocol and a rate based on said first protocol to convert received rate information on said second protocol to the rate based on said first protocol", "calculating a weighting coefficient *such that a minimally guaranteed rate is assured for a minimum rate guaranteed class among said classified classes based on said calculated rate*" (emphasis added), "scheduling data conforming to said first protocol *of said minimum rate guaranteed class and of a weighting applied class among said classified classes based on the calculated weighting coefficient to deliver the data in accordance with the scheduling*" (emphasis added), and "scheduling the data conforming to said first protocol after said weighting, such that the data conforming to said first protocol is delivered *at a transmission rate equal to or lower than said calculated rate, to deliver the data in accordance with the scheduling*" (emphasis added). Nothing like this is even hinted at by the combination of Joseph et al., Heink et al. and Aoki et al.
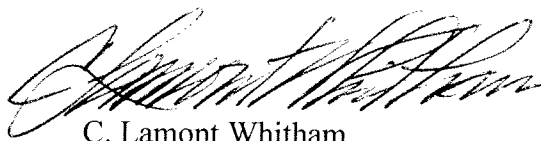
In view of the foregoing, it is respectfully requested that the application be reconsidered, that claims 1, 8 to 11, 13, and 18 be allowed with previously allowed claims 2 to 7, 12, and 14 to 17, and that the application be passed to issue.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or

personal interview.

A provisional petition is hereby made for any extension of time necessary for the continued pendency during the life of this application. Please charge any fees for such provisional petition and any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041.

Respectfully submitted,

C. Lamont Whitham
Reg. No. 22,424

Whitham, Curtis, Christofferson & Cook, P.C.
11491 Sunset Hills Road, Suite 340
Reston, VA 20190

Tel. (703) 787-9400
Fax. (703) 787-7557

Customer No.: 30743